

# Characterization of Aquatic Vertebrate Fauna in New Jersey Springs

Brian Henning

New Jersey Department of Environmental Protection  
Bureau of Freshwater and Biological Monitoring  
35 Arctic Pkwy, Trenton, NJ 08625



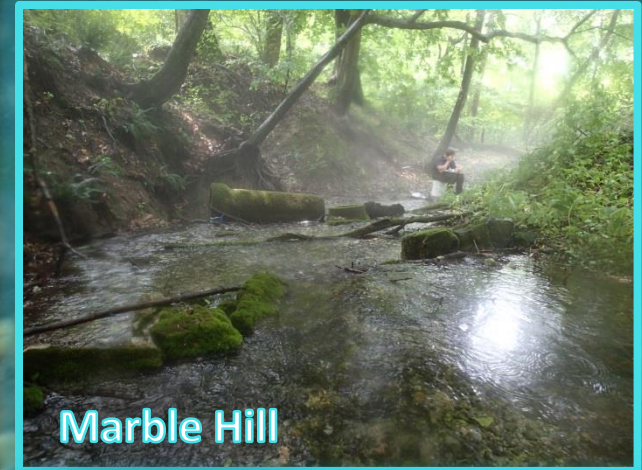
NJ Water Monitoring Council Meeting  
May 19, 2016





# Springs

Spring Name	Municipality	County
Brau Kettle	Sandyston	Sussex
Dingman's Ferry Spring	Sandyston	Sussex
Ennis Road Spring	Sandyston	Sussex
Kanouse Spring	Oakland	Bergen
Marble Hill Spring	Lopatcong	Warren
Shurts Rd Spring	Franklin	Warren
Spring Brook Cabin Spring	Sandyston	Sussex
Valley Crest Springs	Clinton	Hunterdon



Marble Hill



Spring Brook Cabin



Dingman's Ferry



Brau Kettle



Shurts Rd.



# Spring Sampling Methods

## Electrofishing

- A reach of 50 m is electrofished moving upstream sampling all available cover using one backpack electrofisher. Crew of 2 or 3 individuals net all vertebrates sighted.



## Area Constrained Survey

- An area of 60 m<sup>2</sup> (2 transects measuring 15 x 1 m in the water and a 15 x 1 m area along the bank) is sampled by a crew of two individuals flipping all available cover (rocks, logs, debris). All salamanders and frogs are captured with the aid of dip nets.



## Water Quality

- Ambient water quality parameters (dissolved oxygen (DO; mg/L), DO (% saturation), pH, temperature and conductivity)





# Aquatic vertebrate fauna in NJ Springs

14

Species

Northern red salamander



Slimy sculpin



Northern dusky salamander



Red-spotted newt



Green frog



Pickerel frog



Brook trout



American Eel



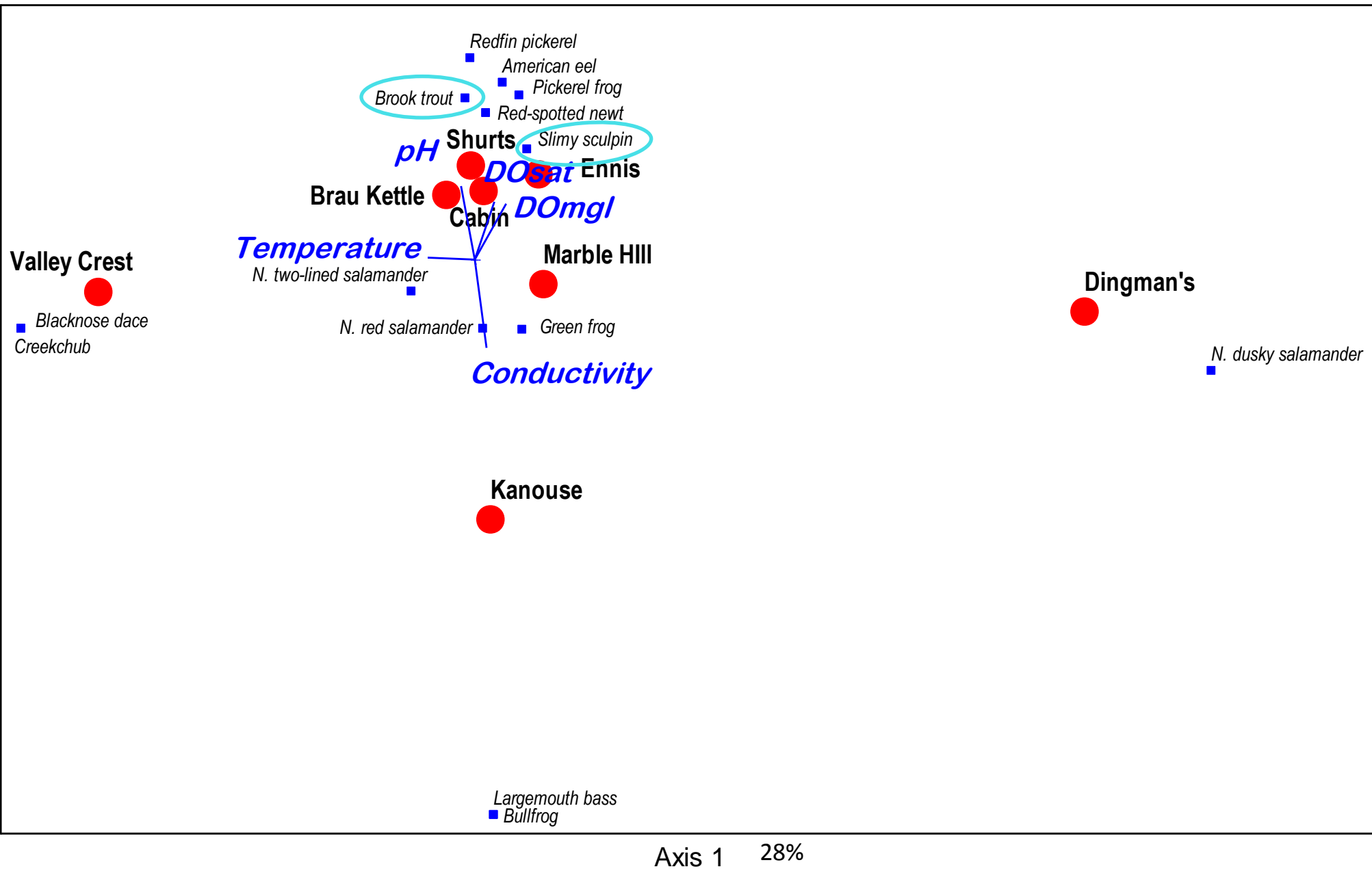


# Water Quality Measures

Site	Dissolved oxygen (mgl)	Dissolved oxygen (% saturation)	Temperature °C	pH	Specific Conductivity (µmhos/cm)
Brau Kettle	10.56	96.6	10.74	7.54	282
Dingman's	10.73	94.5	8.84	7.05	442
Ennis	10.33	96.3	11.01	7.75	393
Kanouse	7.29	70.9	13.65	6.49	628
Marble Hill	9.69	87.2	10.74	7.23	328
Shurts Rd	7.29	70.5	13.5	7.88	368
Spring Cabin Brook	10.48	106.9	15.59	6.61	61
Valley Crest	9.04	85.3	12.62	7.34	356

# Canonical Correspondence Analysis (CCA)

Presence/Absence





# Preliminary Findings

## Ecological Significance

- Low species richness, low abundance
- Harbor species sensitive to perturbation
- Stenothermic species (narrow temperature tolerance)
- Importance to spawning fish and amphibians? (Seasonality)
- Threatened species?(Pending)
- Connectivity to downstream waters (areas for restoration, improvement of habitat)







Questions?

[Brian.Henning@dep.nj.gov](mailto:Brian.Henning@dep.nj.gov)